

REMARKS

In the Office Action mailed May 25, 2006, the Examiner raised a concern under 35 U.S.C. §112 in relation to how the "ultrasound transducer array" of Claims 1-29 may be "supportably mounted to . . . [a] first side of . . . [a] support member, said ultrasound transducer array including a plurality of transducer elements that are electrically, directly and fixedly interconnected to a distal end of corresponding different ones of . . . [a] plurality of electrically conductive members at said first side of the support member". In this regard, and by way of example only, Applicant notes that in relation to one embodiment shown in Fig. 1 of the present application, corresponding text states that:

[D]ifferent ones of the electrically conductive wires 22B extend through each of the separated portions at the forward-facing side of support member 40 to directly contact the ultrasound transducer array 30. Page 11, lines 6-8.

In turn, the present application states that:

The ultrasound transducer array 30 may comprise a piezoelectric layer 32 interconnected (**e.g., bonded**) to support member 40. Emphasis added. Page 9, lines 14-15.

Further, the present application states that:

[E]lectrically conductive ground layer 36 and piezoelectric layer 32 . . . may each comprise an aligned, common plurality of separated portions that define a one-dimensional array or row, of transducer elements of ultrasound transducer array 30. Page 10, line 16-19.

In relation to another embodiment illustrated in Fig. 2 of the present application, corresponding language to that set forth above may be found at page 15, lines 15-17, page 14, lines 8-9 and page 15, lines 3-6. Applicant submits that the noted figures and corresponding text should clearly overcome the concerns raised under 35 U.S.C. §112.

In the Office Action, the Examiner rejected Claims 1-9 and 18-26 under 35 U.S.C. §103(a) as being obvious over the newly cited reference of U.S. Patent No. 5,398,689 to Connor *et al.* Applicant submits that all claims are allowable over the prior art.

In this regard, Independent Claims 1 and 22 are each directed to an ultrasound probe that includes a support member comprising an acoustic dampening material, a signal cable having a plurality of electrically conductive members/wires extending continuously along the length of said cable, and an ultrasound transducer array having a plurality of transducer elements supportably mounted to a first side of the acoustic dampening support member. As previously noted:

- (i) a distal end portion of each of the plurality of electrically conductive members/wires of the signal cable is embedded within and

continuously extends into and through the acoustic dampening support member to a first side from a second side thereof;

(ii) a flexible primary portion of the same signal cable extends proximally away from the second side of the acoustic dampening support member with said plurality of electrically conductive members/wires being electrically separated in the flexible primary portion by an electrically non-conductive material; and

(iii) a plurality of transducer elements comprising the ultrasound transducer array are electrically, directly and fixedly interconnected to the distal end of corresponding different ones of the plurality of electrically conductive members/wires at the first side of the support member.

Applicant submits that the prior art fails to disclose or otherwise render obvious the present invention.

In particular, Connor *et al.* fails to disclose an ultrasound probe comprising a signal cable having electrically conductive members/wires with distal end portions extending into and through an acoustic dampening support member in an embedded manner to electrically, directly and fixedly interconnect to different transducer elements of an ultrasound transducer array. In fact, Connor *et al.* fails to even contemplate the use of an acoustic dampening support member. Rather, in relation to Figs. 1 and 2 reproduced below, Connor *et al.* teaches the inclusion of conductor tabs 100 of interconnect 16 to provide an "electrical connection between" conductor traces 32 of flex circuit 26 and transducer elements 27 of array 28, wherein the conductor tabs 100 of interconnect 16 are clearly shown as extending away from and otherwise not embedded within any other portion of interconnect 16.

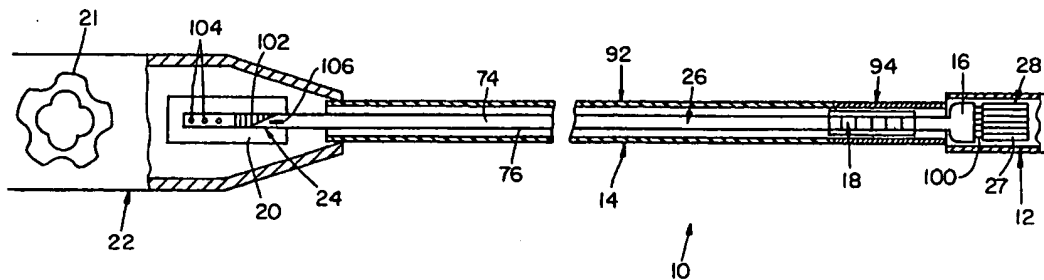


Fig. 1

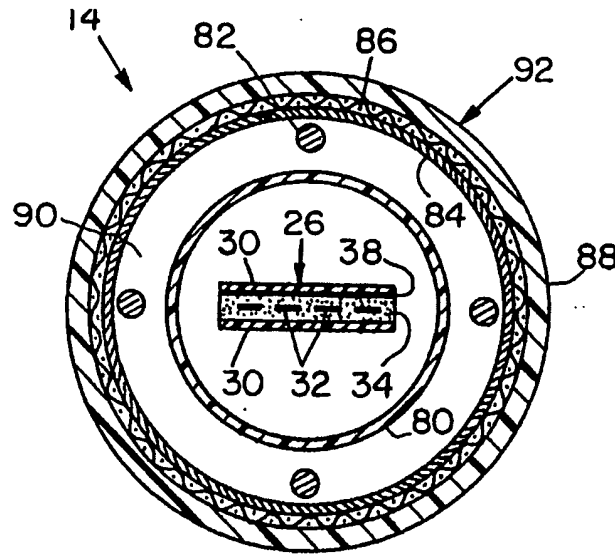


Fig. 2

In relation to the noted shortcomings of Connor *et al.*, Applicant notes that the Examiner has recognized that “the description of the interconnect is not given as being made of acoustic dampening material with the index of Claim 8 and having the traces being embedded within the interconnect”. See pages 3 and 4 of the Office Action mailed May 25, 2006. Indeed, Applicant further points out that Connor *et al.* fails to disclose that the interconnect 16 includes any functional features other than conductor tabs 100, and certainly does not disclose the use of an acoustic dampening material. In an attempt to overcome such deficiency, the Examiner has asserted “Official Notice” that “the usage of acoustic dampening material surrounding electrical wires is old and very well-known in order to reduce cross-talk” and that it would have therefore been obvious to one skilled in the art at the time of the invention to have recognized that a material with “the proper dampening index of the interconnect would have to be comprised of acoustic dampening material in order to minimize cross-talk between the wires”. See page 4 of the Office Action mailed May 25, 2006. Applicant traverses the Examiner’s assertion of Official Notice and respectfully requests that the Examiner provide documentary evidence in support of the position taken.

In this regard, Applicant notes that, while the support member comprising the ultrasound transducer probe of the present invention may function to reduce electrical cross-talk between electrically conductive members, the utilization of an acoustic dampening material in the present invention specifically serves to dampen incident acoustic waves so as to acoustically isolate the ultrasound transducer array for

enhanced imaging. For example, and as described in the present application, the acoustic dampening material dampens acoustic waves traveling in a rearward direction relative to the ultrasound transducer array, thereby reducing undesirable artifacts and image signals provided by the ultrasound transducer array. See e.g., page 3, line 21 – page 4, line 3 of the application.

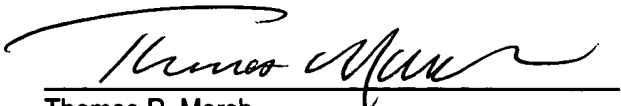
Again, and in support of Applicant's traversal of the Examiner's attempt to invoke Official Notice, Applicant notes that Connor *et al.* provides no disclosure as to the construction, or even as to the function of interconnect 16, apart from the inclusion of extending tabs 100 that provide for an electrical connection between transducer elements 27 and traces 32. As such, Applicant submits that, in effect, the Examiner is attempting to invoke Official Notice so as to introduce a component and associated functionality otherwise missing from the only cited reference of Connor *et al.*

In view of the foregoing, Applicant submits that Claims 1 and 21, as well as dependent Claims 2-6, 8-21 and 23-29 are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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